# Using Coded Semantic Relationships to Retrieve and Structure Clinical Reference Information

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## INTRODUCTION

Search/SR is a prototype clinical search and retrieval tool that structures and presents information from GASNet, an on-line anesthesiology information source (http://gasnet.med.yale.edu/gta), using coded semantic relationships. Search/SR consists of: 1) an information source, GASNet, 2) a knowledge base (KB) containing semantic relationships (SRs) which code documents in GASNet, and 3) a World Wide Web (WWW) interface and retrieval tool. A clinician submits a preanesthesia note (stripped of patient identifying information) to Search/SR by copying it electronically into a Web form. The retrieval tool searches the note for clinical concepts and synonyms contained in the KB, and returns the list of concepts. The user selects a concept of interest and Search/SR then generates a semantically structured web page with the GASNet sources for the concept immediately available via hypertext links. Clinical concepts linked to the search concept by the SRs are also presented to allow their selection for further searching.

## AN EXAMPLE OF SEARCH/SR

An HTML form (not shown) allows a clinician to electronically submit a preanesthesia note to Search/SR. Figure 1 shows a list of concepts found in a note describing a patient with pre-eclampsia, that allows the clinician to choose a concept of interest.

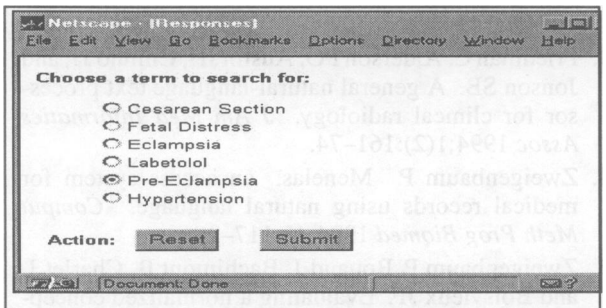


Figure 1: Concepts present in note

Figure 2 demonstrates the result of selecting the concept Pre-eclampsia. Topic hyperlinks are grouped by their respective SRs (i.e., Pre-eclampsia "affects" Hemodynamics), and can be used to immediately retrieve GASNet documents. In addition the clinician may choose to search on a new concept such as Pulmonary Artery Catheter which is linked via the SR "monitors" to the concept of pre-eclampsia.

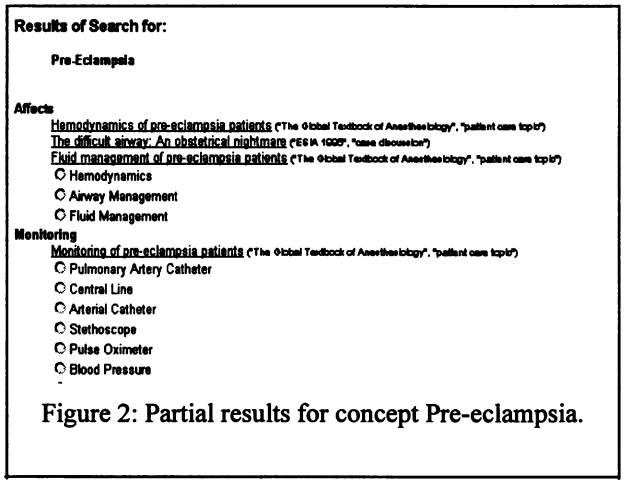


Figure 2: Partial results for concept Pre-eclampsia.

## SUMMARY

Search/SR explores the use of explicitly coded SRs for information search and retrieval for a clinical domain. This project demonstrates the utility of using SRs: 1) to perform focused retrieval of relevant documents, 2) to present an outline of the material retrieved in a semantically structured (and clinically natural) fashion, and 3) to list explicitly the related terms under each SR to facilitate further searching.

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